

ECOLOGICAL NOTES AND DESCRIPTION OF PREVIOUSLY UNRECORDED
FEATURES OF ONITHOCHITON ASHBYI, B. and M., ACANTHOCHITON
CROCODILUS, T. and A., TOGETHER WITH DEFINITIONS OF A NEW
CALLOCHITON (POLYPLACOPHORA).

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ONITHOCHITON ASHBYI.

Onithochiton ashbyi, Bednall and Matthews, Proc. Mal. Soc. Lond., vol. vi., pt. 2, p. 92, 1906.

O. ashbyi, of Torr, Trans. Roy. Soc. S. Austr., vol. xxxvi., p. 151, 1912.

O. ashbyi, of Iredale and Hull, Austr. Zool., vol. iv., pt. 4, p. 266, 1926.

Owing to the fortunate rediscovery by the writer of this rare chiton on 2nd April last, one is able to add some additional information respecting it. Neither the original description nor the more recent one by Iredale and Hull, make any reference to its habitat, other than the fact it was found in this State, no information respecting its station and no reference is made to the existence of "eyes." One is also able to add to the previous knowledge of its girdle characters. As this is the only known species of chiton inhabiting the waters of South Australia that is possessed of well-developed "eyes," information respecting this feature is the more valuable.

History.—Prior to the present rediscovery, only three examples had been found. The first, the type, was found by the writer on rocks at low water at Port Willunga, about the year 1896, and was placed in Bednall's hands for description with another novelty, taken by the writer at the same time. Bednall some time later sent the two, to I think Sowerby; both were lost in the post, the *Onithochiton* was recovered at the G.P.O., London, the other specimen was never seen again. It was not described until 1906, or ten years after its discovery. The second specimen was taken about five years after the first, at the same spot; this was crushed and lost on the journey to London in 1922. The third specimen was found by Mr. Walter Klem and identified by Dr. Torr when they were working together near Corney Point, Yorke Peninsula. In (?) 1918, it was taken on a rock in a deep hole at extreme low water. The exact spot was visited by the writer in company with Klem last January, but no *Onithochitons* were forthcoming.

On April 2 another attempt was made at the original locality at Port Willunga. The tide was an unusually low one, so that he was able to work for nearly half an hour quite 20 yards beyond the spot where his earlier discovery had been made.

Station.—It will be seen that four out of the five known specimens have been taken by the writer at Port Willunga, and each of these has been adhering to a smooth, calcareous alga, which at that spot encrusts many of the rocks; Mr. Klem informed the writer that his find was on similarly encrusted rocks. Three of the examples have been on the pink alga, and the second specimen on the green; in each case the colour of the animal has harmonised with the colour of its host. In common with other members of the genus they cling very tightly to the rock, the elastic girdle being so expanded as to completely fill the small cavities of the rock surface, with which it corresponds so closely in colour, that it is difficult

to distinguish the animal. Their station, we may conclude, is on more or less exposed rocks which at lowest spring tides are still covered with 2 feet of water at the bottom of the tide, and only occur on rocks that are encrusted with the particular alga referred to above. The discovery near Corney Point indicates that it may be searched for in both gulfs.

Eye-pits.—The description of the shell surface published by Iredale and Hull need not be repeated, as it well indicates the nodulose sculpture, but, as before stated, no reference is made to the "eyes." Torr, in the brief notice he gives of this species (*l.c.*) says, "The 'eyes' are of a pearly appearance, set in its cream coloured valves." This refers to Ashby's example No. 2, which had been bleached by formalin and is now lost.

"Eyes" are scattered without any definite order about the tegmentum of the anterior valve and a single diagonal row on each lateral area, consisting of 5 to 7

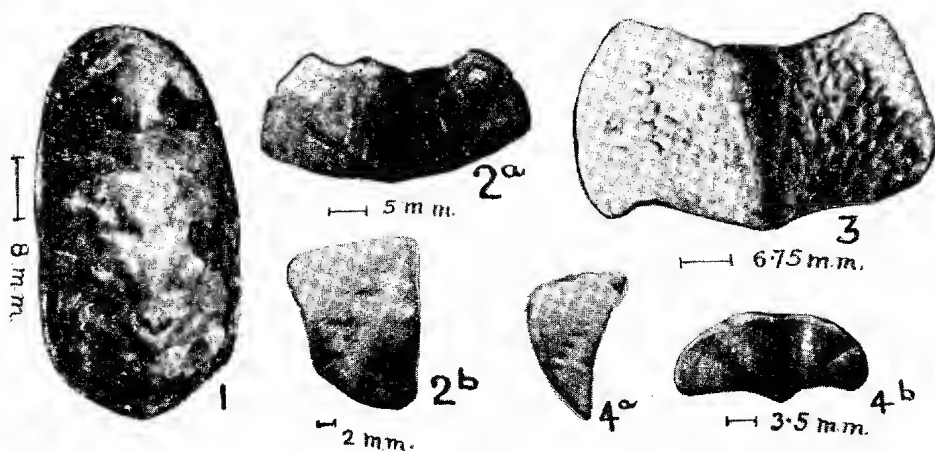


Fig. 1. *Onithochiton ashbyi*, Bednall and Matthews, Port Willunga. Topotype, whole shell. Ashby coll. Shows smooth, unsculptured surface and raised, irregularly nodulose, lateral areas; the dark blotches on valves 2, 5, and 8 are red. $\times 6$.

Fig. 2. *Callochiton rufus*, Ashby. Dredged in Gulf St. Vincent. Holotype. Ashby coll. Median valve showing shallow pits and ridges across pleural areas. (a) full valve, $\times 7$; (b) side view with strong lateral lighting to show pits, $\times 8\frac{1}{2}$.

Fig. 3. *Acanthochiton crocodilus*, Torr and Ashby, Daly Head. Ashby coll. Median valve, showing coarse, triangular granules and coarsely toothed edging of dorsal area (pinnatifid). $\times 7$.

Fig. 4. *Callochiton klemi*, Ashby, Daly Head. Holotype. Median valve showing short, broadly-ovate pits. Ashby coll. (a) side view, shell accidentally broken but showing pits, $\times 8\frac{1}{2}$; (b) same valve complete before accident, $\times 7$.

"eye-pits," this row commencing near the jugum and extending to the girdle. There are two or three perforations present in the lateral portion of the tail valve which may possibly be the remains of "cyc-pits," but the origin of these has not been accurately determined. The "eye-pits" in the anterior valve and lateral areas of the median valves are 10μ in diameter, whereas my measurements of this organ in the Western Australian species *O. scholviemi*, Thiele, are 15μ , and in the type species of the Genus *Tonicia* (*T. elegans*), 25μ . The "eye-pits" in *O. ashbyi* are funnel-shaped, the apex ending in a hole penetrating the tegmentum. The sides of these funnel-shaped apertures glisten, as if they had been washed with mercury or burnished with some shiny substance. Is it possible that this shiny surface is the remains of the cornea?

Girdle.—Bednall and Matthews, in their description of the type, state: "Girdle felty, but under the lense covered with minute scales, irregular in size and shape, like grains of sand." The only reference to the girdle in Iredale and Hull's description is: "Girdle horny, in dried type shell." The former were quite correct in recognising the existence of scales, for the girdle is clothed with minute, arenaceous scales, but the existence of a distinct girdle fringe has heretofore been quite overlooked. Both examples examined possess a very distinct girdle fringe which is composed of closely packed, short, stout, glassy spicules with blunt apices; they measure 30 to 35 μ in length and 5 μ in width.

Measurements and Colour.—The specimen in spirit measures 9 mm. \times almost 5 mm., of which the girdle accounts for fully 2 mm. The other dry example measures 8 mm. \times 4 mm. In colour, the dry specimen is uniformly "Pompeian Red" (Ridgway, pl. xiii.); the other has two large lateral red blotches on valves 2, 5, and 8; the rest of the shell buffish-cream.

ACANTHOCHITON CROCODILUS.

Acanthochites crocodilus, Torr and Ashby, Trans. Roy. Soc. S. Austr., vol. xxii., pt. 2, p. 216, 1898.

A. crocodilus, of Torr, Trans. Roy. Soc. S. Austr., xxxvi., p. 161, 1912.

Acanthochiton crocodilus, of Iredale and Hull, Austr. Zool., vol. iv., pt. 2, p. 86, 1925.

Amongst the material collected by Mr. Walter Klem, of Corney Point, Yorke Peninsula, at Daly Head, is a single median valve of this rare species. Hitherto this shell has only been known from the two original specimens found by Torr while he and the writer were working together at Marino in this State, over thirty years ago, and a single valve collected by Klem.

Station.—No information has previously been given as to the station of this species, and therefore the following notes will be of value. Torr and the writer were working well away from the shore at an exceptionally low tide; the portion of reef upon which we were working was covered by about 2 feet of water. Torr pulled up a rock upon upperside of which, between the stems of brown algae, were two pale-coloured *Acanthochitons*, side by side. No other live example of this chiton has been seen or taken since. If memory serves me rightly there was no covering sand, as is so often the case with members of this genus, but they were well exposed on the smooth rock, between the stems of growing brown algae. Early in, I think, 1920 a specimen was loaned to the writer by Mr. Bassett Hull under the name of *A. cori*, but although very eroded was certainly not conspecific with that species—he advised Hull that it was in his opinion *A. crocodilus*; Torr confirmed this opinion later. In *l.c.*, vol. xlv., p. 286, 1920, Ashby recorded this occurrence, noting that Hull had it from the collection of Mr. Brazier, presumably from New South Wales. Iredale and Hull have recently distinguished the shell from that State under the name *Acanthochiton crocodilus debilior*.

As no good figure of a median valve of this species has been published I include a photograph of the median valve from Daly Head, which has been compared with a median valve of the type.

Callochiton klemi, n. sp.

I am indebted to Mr. Walter Klem, after whom I have much pleasure in naming it, for the gift of a single median valve of a new and distinct species of *Callochiton*, which he found amongst shell-grit at Daly Head, Yorke Peninsula.

Description of Median Valve.—Carinated, although at the jugum it is rounded, elevated, side slope steep and almost straight; dorsal area beaked,

longitudinally much arched and laterally rounded, unseparated by sculpture from the pleural area; pleural area similarly sculptured to the dorsal area except that portion immediately abutting on the lateral area, which is ornamented with a row of deep, broadly-ovate pits, numbering five, the lateral area is strongly raised and crossed by several growth ridges, which are not clearly visible except by lateral lighting. The whole surface of the shell, in all areas, is seen under 65 magnifications, binocular microscope, to be decorated with innumerable, shuttle-shaped, raised, minute granules, the granules themselves being distinctly pitted, while the interspaces between the granules are deep and narrow grooves; the granular sculpture in the lateral areas is a little coarser, here a large proportion of them are furnished with a distinct pit with a dark centre; these may be an enlarged development of the megalopores or minute "eye-dots," they are probably connected with the terminals of sensory fibres. The "eaves" do not overhang, are spongy, *i.e.*, studded with perforations, a character that is common to members of this genus; the sutural laminae are joined across the middle line, but are too worn to allow of the determination of either the depth or the breadth of the sinus, but this is probably broad and shallow, neither can the slitting be accurately determined, although the bases of three grooves is discernible in the insertion plate.

Summary of characters present that are typical of the Genus *Callochiton*:—

- (a) The eaves are thickened and spongy.
- (b) The sutural laminae are united across the median line.
- (c) The insertion plate shows three grooves which may be the bases of three slits or due to propping.
- (d) The surface of the shell, $\times 65$, is quite characteristic of the Genus *Callochiton*.

COMPARISONS.

Is distinguished from *C. platessa*, Gould, and *C. elongatus*, Hed. and May, by the deep, short, wedge-shaped pits, at the junction of the pleural and lateral areas. From *C. rufus*, Ashby, in that the pits are short and deep and double the number. In *C. rufus*, the pits are shallow, widely apart, and each pit has on the upper side a longitudinal ridge which extends across the valve. From *C. mayi*, Torr, in that there is no longitudinal ribbing in the pleural area.

Colour.—Between "Shrimp Pink" and "Strawberry Pink" (Ridgway, pl. i.).

Measurement.—Lateral measurement, 3.5 mm.; longitudinally, barely 2 mm.

Habitat.—Daly Head, between Cape Spencer and Corney Point, Spencer's Gulf, Yorke Peninsula.